

WHAT IS CLAIMED IS:

1.           A storage device controller comprising:  
              channel control portions each including a circuit board on which a file access processing portion for receiving file-by-file data input/output requests sent from information processors and an I/O processor for outputting I/O requests corresponding to said data input/output requests to storage devices are formed, said channel control portions being classified into groups for the sake of fail-over; and

              a processing portion for deciding that data updated by each of said channel control portions and handed over at the time of said fail-over are stored in a shared volume which is a storage region logically set on physical storage regions provided by said storage devices and which can be accessed commonly by any other channel control portion belonging to the same group as said channel control portion updating said data.

2.           A storage device controller comprising:  
              channel control portions each including a circuit board on which a file access processing portion for receiving file-by-file data input/output requests sent from information processors and an I/O processor for outputting I/O requests corresponding to said data input/output requests to storage devices are formed, said channel control portions being classified into groups for the sake of fail-over; and

              a processing portion for deciding that data

updated by each of said channel control portions and handed over at the time of said fail-over are stored in a shared memory which is contained in said storage device controller and which can be accessed commonly by said channel control portions.

3. A storage device controller comprising:

channel control portions each including a circuit board on which a file access processing portion for receiving file-by-file data input/output requests sent from information processors and an I/O processor for outputting I/O requests corresponding to said data input/output requests to storage devices are formed, said channel control portions being classified into groups for the sake of fail-over; and

a processing portion for deciding that data updated by each of said channel control portions and handed over at the time of said fail-over are sent to another channel control portion belonging to the same group as said channel control portion updating said data, through a network connecting said channel control portions to one another.

4. A storage device controller according to Claim 1, wherein:

local volumes which are storage regions logically set on said physical storage regions provided by said storage devices and which can be accessed by said channel control portions individually and respectively are assigned to said channel control

portions respectively; and

said processing portion further decides that said data are stored in said local volume of the other channel control portion belonging to the same group as said channel control portion updating said data.

5. A storage device controller according to Claim 1, wherein:

local volumes which are storage regions logically set on said physical storage regions provided by said storage devices and which can be accessed by said channel control portions individually and respectively are assigned to said channel control portions respectively;

said processing portion further decides that said data are stored in said local volume of the other channel control portion belonging to the same group as said channel control portion updating said data;

said storage device controller further comprises an inherited data reference table on which reference destinations of said data are recorded; and

said processing portion reads said data from any one of said shared volume, said shared memory and said local volumes on the basis of said reference destinations of said data recorded in said inherited data reference table.

6. A storage device controller according to Claim 3, wherein said processing portion sends said data to all said channel control portions in said

storage device controller through said network when said data are shared data allowed to be referred to by all said channel control portions in said storage device controller.

7. A storage device controller according to Claim 1, wherein said processing portion stores said data in a second shared volume which is a storage region logically set on physical storage regions provided by said storage devices and which can be accessed commonly by all said channel control portions in said storage device controller when said data are shared data allowed to be referred to by all said channel control portions in said storage device controller.

8. A storage device controller according to Claim 1, wherein said data handed over at the time of said fail-over contain at least one of NFS user data, CIFS user data, system administrator data, fail-over heart beat, IP address of a channel control portion, NFS file lock information and cluster control information.

9. A control method for a storage device controller including channel control portions each having a circuit board on which a file access processing portion for receiving file-by-file data input/output requests sent from information processors and an I/O processor for outputting I/O requests corresponding to said data input/output requests to

storage devices are formed, said channel control portions being classified into groups for the sake of fail-over, said control method comprising the step of deciding that data updated by each of said channel control portions and handed over at the time of said fail-over are stored in a shared volume which is a storage region logically set on physical storage regions provided by said storage devices and which can be accessed commonly by any other channel control portion belonging to the same group as said channel control portion updating said data.

10. A control method for a storage device controller including channel control portions each having a circuit board on which a file access processing portion for receiving file-by-file data input/output requests sent from information processors and an I/O processor for outputting I/O requests corresponding to said data input/output requests to storage devices are formed, said channel control portions being classified into groups for the sake of fail-over, said control method comprising the step of deciding that data updated by each of said channel control portions and handed over at the time of said fail-over are stored in a shared memory which is contained in said storage device controller and which can be accessed commonly by said channel control portions.

11. A control method for a storage device

controller including channel control portions each having a circuit board on which a file access processing portion for receiving file-by-file data input/output requests sent from information processors and an I/O processor for outputting I/O requests corresponding to said data input/output requests to storage devices are formed, said channel control portions being classified into groups for the sake of fail-over, said control method comprising the step of sending data updated by each of said channel control portions and handed over at the time of said fail-over to another channel control portion belonging to the same group as said channel control portion updating said data, through a network connecting said channel control portions to one another.

12.           A control method for a storage device controller according to Claim 9, wherein:

              local volumes which are storage regions logically set on said physical storage regions provided by said storage devices and which can be accessed by said channel control portions individually and respectively are assigned to said channel control portions respectively; and

              said control method further comprises the step of storing said data in said local volume of the other channel control portion belonging to the same group as said channel control portion updating said data.

13. A control method for a storage device controller according to Claim 9, wherein:

local volumes which are storage regions logically set on said physical storage regions provided by said storage devices and which can be accessed by said channel control portions individually and respectively are assigned to said channel control portions respectively;

said control method further comprises the steps of:

storing said data in said local volume of the other channel control portion belonging to the same group as said channel control portion updating said data;

referring to an inherited data reference table on which reference destinations of said data are recorded; and

reading said data from any one of said shared volume, said shared memory and said local volumes on the basis of said reference destinations of said data recorded in said inherited data reference table.

14. A control method for a storage device controller according to Claim 11, further comprising the step of sending said data to all said channel control portions in said storage device controller through said network when said data are shared data allowed to be referred to by all said channel control portions in said storage device controller.

15. A control method for a storage device controller according to Claim 9, further comprising the step of storing said data in a second shared volume which is a storage region logically set on physical storage regions provided by said storage devices and which can be accessed commonly by all said channel control portions in said storage device controller when said data are shared data allowed to be referred to by all said channel control portions in said storage device controller.

16. A control method for a storage device controller according to Claim 9, wherein said data handed over at the time of said fail-over contain at least one of NFS user data, CIFS user data, system administrator data, fail-over heart beat, IP address of a channel control portion, NFS file lock information and cluster control information.

17. A control method for a storage device controller, wherein:

said storage device controller includes channel control portions each having a circuit board on which a file access processing portion for receiving file-by-file data input/output requests sent from information processors and an I/O processor for outputting I/O requests corresponding to said data input/output requests to storage devices are formed; volumes are logically set on said storage devices;



a first volume in said volumes is set so as to be allowed to be accessed only by a first channel control portion in said channel control portions;

a second volume in said volumes is set so as to be allowed to be accessed only by said first channel control portion and a second channel control portion in said channel control portions;

a third volume in said volumes is set so as to be allowed to be accessed by said first and second channel control portions and a third channel control portion in said channel control portions;

said control method comprising the steps of:

holding control information for identifying contents of data stored in said volumes and volume information for designating said volumes required for storing said data while associating said control information and said volume information with each other;

accepting a request to update said data;

extracting said volume information associated with said control information concerning said data to be updated on the basis of said accepted request; and

deciding that said data to be updated on the basis of said accepted request are stored in said second volume designated by said extracted volume information.

18. A control method for a storage device controller according to Claim 17, further comprising

the step of performing setting so that processing that has been executed by said first channel control portion is executed by said second channel control portion when failure occurs in said first channel control portion.